



T R U N O R T H

L. Habitat Management Plan (HMP)

Special-status Plant Mitigation & Monitoring Plan

Spring Mountain ECP (APN: 022-140-054)

Napa County, California



Prepared for:

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WRA Project # 340447

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List of Preparers

Aaron Arthur – Associate Plant Biologist

Definitions

Subject Property: The 40.8-acre single parcel (APN: 022-140-054) subject of #P25-00194-ECPA and subsequent mitigation measures addressed in this document.

Impact Area: The entire area subject to the clearing of vineyards and associated infrastructure (e.g., access roads, vineyard avenues, irrigation), totaling 5.81 acres.

Planting Areas: The areas within the Preservation Area designated for planting narrow-anthered brodiaea discussed in this document, totaling 0.24 acres to 2.37 acres.

Landscape Contractor: The landscape and/or nursery staff tasked with: (1) propagule (seedling, live-cutting, seed) collection; (2) propagule propagation; (3) nursery stock maintenance and storage; (4) Planting Area preparation and irrigation; (5) planting of nursery stock; (6) assistance with As-built Report; and (7) annual maintenance of Planting Area and plants. The Landscape Contractor shall have experience with collecting, germinating, and growing native plants in natural settings for the purposes of restoration/mitigation. These roles may be separated across several entities; however, they must coordinate on respective roles noted above.

Qualified Biologist: The biologist(s) tasked with: (1) this Plan; (2) assisting Landscape Contractor with donor population identification; (3) selection of Planting Areas; (4) lead on As-built Report; and (5) annual monitoring, recommendations, and reporting.

1.0 INTRODUCTION

This Narrow-anthered Brodiaea Plant Mitigation and Monitoring Plan (Plan) has been prepared for Daniel Byrne of TruNorth on behalf of Misty Mountain Properties, LLC. (Applicant) to compensate for impacts to special-status plants as described in the permit applications for *Spring Mountain Road ECP Track I File #P25-00194*. The Applicant submitted an erosion control plan (ECP) with the County of Napa for the development of 5.81 gross acres of vineyards (including access roads, vineyard avenues) located on Spring Mountain Road, Napa County (Subject Property).

Biological surveys were conducted in 2024 and 2025 resulting in a census of narrow-anthered brodiaea (NABR; *Brodiaea leptandra*) in the Subject Property and grading limits. This Plan details: (1) purpose of this Plan; (2) summary of the required mitigation; (3) existing conditions of the Subject Property; (4) planting and seeding methods for each of the four target species; (5) monitoring of the plantings and seedings, and evaluation of the success criteria; (6) monitoring reporting; and (7) contingency measures and responsible parties.

1.1 Responsible Parties

The Applicant is solely responsible for developing, implementing, maintaining, and monitoring the proposed restoration activities. This includes any potential land acquisition; property management; compliance with local, state, and federal laws and regulations; construction of capital improvements; police, and fire services; and self-governance, including public elections and taxation, if such are necessary to fulfill the obligation of this Plan.

The applicant: Misty Mountain Properties, LLC
Contact: Daniel Byrne

The preparer of this Plan: WRA, Inc.
1318 Redwood Way
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Contact: Aaron Arthur

1.2 Plan Objective

The objective of this Plan is to compensate for the conversion of 0.24 acres of occupied habitat. Five hundred sixty-two (562) individuals of NABR were censused in 2024 of which 432 are in the vineyard grading limit (Impact Area). The 130 individuals not affected by the project will remain in their current locations, undisturbed by the proposed vineyard development. The designated Planting Area will accommodate the translocation of 432 individuals plus live seed from the Impact Area, thereby preventing any permanent impacts to NABR resulting from project activities. This area will be subject to a permanent deed restriction with a 9.88:1 ratio of HMA to impact area.

2.0 EXISTING CONDITIONS

It is northwestern Napa County, approximately five aerial miles southeast of downtown Calistoga and four miles northwest of downtown Saint Helena. The Study Area is situated on the eastern flank of the Mayacama Mountains south of the Diamond Mountain. The overall topography of the Study Area is moderately to steeply sloped, ranging from approximately 1,300 to 1,650 feet above sea level. According to the *Soil Survey of Napa County* (USDA 1978) and as shown in Figure A-2 (Appendix A), the Study Area is underlain by four soil mapping units: Boomer gravelly loam, volcanic bedrock, 11 to 43 percent slopes; Boomer gravelly loam, volcanic bedrock, 14 to 60 percent slopes; Hambright-Rock outcrop complex, 2 to 30 percent slopes; and Kidd loam, 30 to 75 percent slopes.

The average monthly maximum temperature of St. Helena is 89.5 degrees Fahrenheit, while the average monthly minimum temperature is 36.1 degrees Fahrenheit. Predominantly, precipitation falls as rainfall with an annual average of 36.47 inches. Precipitation-bearing weather systems are predominantly from the west and south with most of the rain falling between November and March, with a combined average of 31.35 inches (USDA 2025).

The Subject Property is predominantly undeveloped chaparral, woodland, and forest, with a portion of existing development (gravel road). The property is bounded by adjacent like properties to the north and partially developed (vineyard) properties to the west, east, and south. Regional land uses include suburban and rural residential, wineries, and vineyards (Google Earth 2025). Historically, land use in the region included open rangeland of larger ranches, rural residential, vineyards, and orchards. There is no history of intensive agriculture, quarrying, or mining; however, it was likely timbered in the early 20th Century in the Study Area (Historic Aerials 2025). The site was burned over in the 2020 Glass Fire.

3.0 PLANTING IMPLEMENTATION PLAN

3.1 Implementation Plan

Portions of both the Impact Area and Planting Areas shall be re-surveyed prior to live plant and live seed collection as well as plant/seed relocation. All non-native species with the potential to threaten the success of the plantings/seedlings in the Planting Areas will be documented and appropriate pre-treatments will be deployed by the Landscape Contractor. Such treatment should be targeted specifically for the invasive plant(s) at the Landscape Contractor's discretion. (Site preparation may not be necessary; surveys prior to planting/seeding will inform such a necessity). Recommended pre-treatment is through weed-whipping, which is intended to diminish a single-season of seed set of non-native annual herbs. It should be conducted during the spring to early summer prior to seed set.

If irrigation is recommended by the Landscape Contractor, it should be installed and supplied from the nearby proposed vineyard blocks. Drip irrigation should be applied to each planting, while broadcast irrigation (i.e., sprinkler, soaker hose) should be applied to seeded areas, if seed and/or seed bank soils are spread in the Planting Area. Irrigation will cease and be removed when the

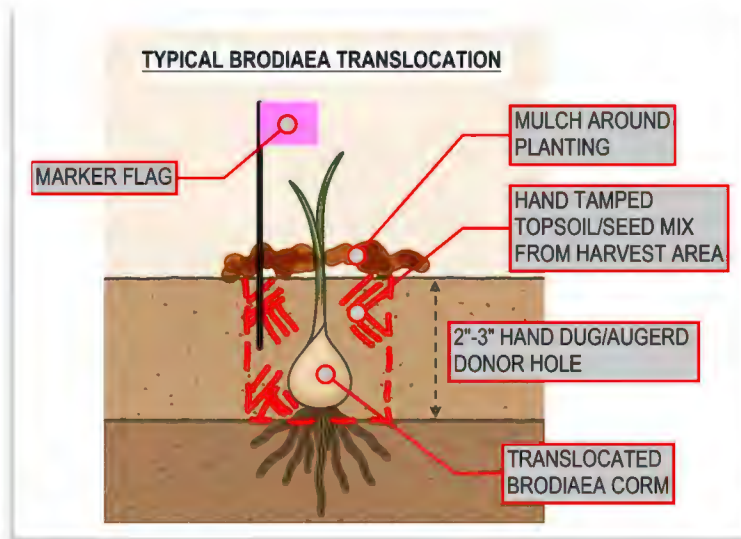
plantings/seedings have been deemed self-sufficient. Irrigation may be deemed unnecessary by the Landscape Contractor.

Narrow-anthered brodiaea (NABR; *Brodiaea leptandra*) is a perennial forb in the Lily Family (Liliaceae) that is known from Lake, Sonoma, and Napa counties. It occurs in broadleaf evergreen forest, mixed evergreen forest, cismontane woodland, chaparral, and grassland underlain by shallow gravelly soils derived from metavolcanic and volcanic rock particularly rhyolite at elevations ranging from approximately 360 to 3,000 feet above sea level (Baldwin et al. 2012, CNPS 2025, CDFW 2025). It has no formal listing but is California Rare Plant Rank 1B (CNPS 2025).

Site Selection: Four hundred thirty-two (432) NABR will be translocated in the Planting Area. The Planting Area has been designated upon agreement with Napa County (Appendix A); however, individual planting sites will be selected by the Landscape Contractor and/or the Qualified Biologist based on suitable micro-site conditions to maximize survival potential. The Planting Area selection considered proximity to existing mapped NABR, suitable soils and associated plant species, ready access for installation and management, future irrigation sources if such are deemed necessary, etc. Likewise, the Planting Area is larger than is necessary to receive the translocated plants and provide the Landscape Contractor the flexibility to plant individuals in the highest quality locations.

Plant Procurement: Under this Plan, plants will be procured from living bulbs situated in the Impact Area and then translocated into the Planting Area. Additionally, live seed will be procured and scattered into the Planting Area at the time of translocation. During peak bloom (estimated late May/early June), the Impact Area will be resurveyed to determine the status of the bloom and estimated timing of seed set as well as flag out the extent of the subpopulations for extraction. Following seed set and senescence (estimated July), the living bulbs will be excavated and live seeds collected. Excavation may be either by hand or by small auger. Depth of excavation should be sufficient to capture the entire bulb, typically 12 to 15 inches. Collections will be immediately placed into appropriately sized nursery pots (e.g., 1-gallon, 5-gallon) with supplementary potting soil to fill any voids in the pot.

Live seed collection requires collecting mature seeds (when fruit is dry) in early/midsummer. Seeds should be stored in dry paper sacks and stored in cool, dry, dark locations. Seeds should be soaked in distilled water and then hand-cast in the Planting Area in fall ideally after the first rains.



Planting/Seeding: As noted, 432 individuals will be planted across the Planting Area and success criteria after 5 years of monitoring shall be 80 percent. Attrition of transplanted NABR should be anticipated, and while the 80 percent success criteria accounts for this potential, live seed will also be collected from existing populations in the Impact Area and redistributed to the Planting Area to provide a potential supplemental NABR source.

Donor holes for plantings should be selected in areas away from dense cover of large shrubs and trees to prevent shading. Holes should be dug by hand or mechanical auger and sized appropriate to the donor plants. Immediate irrigation and organic fertilizer application may be applied if the Landscape Contractor deems it appropriate. Planting should occur in late fall (following the first rains) or spring when there is soil moisture and warm temperatures.

Mulch and/or weed mats should be applied around the plantings to retain moisture and reduce weed competition. Irrigation should be applied to each planting. Finally, all plantings will be counted, mapped, and/or flagged to ensure ready return for monitors in the 5-year monitoring period.

3.2 Maintenance Specifications

Maintenance activities in the Planting Areas during the 5-year monitoring period following planting will include the following tasks as needed: (1) erosion control and repair should such be evident; (2) inspection for signs of vandalism or other disturbance by people or wildlife; and (3) inspections for colonization of problematic non-native plants and actions to control their spread. Removal of non-native species in the Planting Areas will be conducted as needed and recommended in the annual Monitoring Report(s). Removal of non-native species should be conducted by the Landscape Contractor/Qualified Biologist, and/or under their guidance.

Irrigation should only be applied under the direction of the Landscape Contractor/Qualified Biologist. The irrigation regime should not be throughout the year and should be slow-release/drip for a total of no more than three-quarters the volume of the container size (e.g., approximately 3.75 gallons for 5-gallon tree).

3.3 As-built Conditions

A report outlining the as-built conditions of the Planting Areas will be prepared and submitted to the County of Napa within 90 days of the Plan final implementation. The report will document the final layout of the plantings, the general boundaries of existing NABR in the Planting Area, and general boundaries of the broadcast seeding and topsoil application, if applicable. The total number of each planted species shall be tallied and a record of such included in the as-built letter report. The as-built report will also provide a figure of photo-points to be revisited during the monitoring period.

4.0 MONITORING METHODS AND SUCCESS CRITERIA

Monitoring of the Planting Areas will occur each year over a five-year period beginning the first full year following the completion of planting/seeding. Data will be collected during each monitoring visit to assess the successful establishment of the plantings, and germination of the native shrubs/forbs.

The following success criteria should be used as a guide through the monitoring period with the final year (Year 5) success criteria the required goal to determine completion as given in the FEIR. If final performance criteria are not met by the end of Year 5, the Landscape Contractor/Qualified Biologist should determine if a contingency monitoring plan, including remediation efforts, should be put into place until final performance criteria are met.

Year 1

- Survival/emergence of live bulbs of NABR and/or the extent of the NABR planted populations will be 95 percent of those translocated (i.e., 410 individuals/0.23 acres¹).
- Invasive plants on the California Invasive Plant Council (Cal-IPC) High list will not exceed 5 percent cover within the Planting Area.

Year 2

- Survival/emergence of live bulbs of NABR and/or the extent of the NABR planted populations will be 90 percent of those translocated (i.e., 388 individuals/0.22 acres).
- Invasive plants on the California Invasive Plant Council (Cal-IPC) High list will not exceed 5 percent cover within the Planting Area.

¹ Percent of total impacted individuals (432) and acreage (0.24).

Year 3

- Survival/emergence of live bulbs of NABR and/or the extent of the NABR planted populations will be 85 percent of those translocated (i.e., 367 individuals/0.20 acres).
- Invasive plants on the California Invasive Plant Council (Cal-IPC) High list will not exceed 5 percent cover within the Planting Area.

Year 4

- Survival/emergence of live bulbs of NABR and/or the extent of the NABR planted populations will be 80 percent of those translocated (i.e., 345 individuals/0.19 acres).
- Invasive plants on the California Invasive Plant Council (Cal-IPC) High list will not exceed 5 percent cover within the Planting Area.

Year 5

- Survival/emergence of live bulbs of NABR and/or the extent of the NABR planted populations will be 80 percent of those translocated (i.e., 345 individuals/0.19 acres).
- Invasive plants on the California Invasive Plant Council (Cal-IPC) High list will not exceed 5 percent cover within the Planting Area.

Monitoring should be performed by a Qualified Biologist, Landscape Contractor, or similar, with experience in vegetation monitoring. Monitoring of planted species will consist of traversing the entirety of the Planting Area and documenting survivorship of the planted NABR, general observations of their growth and vigor, and any threats to the plantings. The monitoring will note the location of naturally/seeded emergent seedlings; these seedlings will be revisited and monitored in subsequent monitoring years.

Several permanent photo-points will be established for the Planting Areas to provide visual documentation of the progress of plantings/seedings. Photo monitoring will be conducted each monitoring year from these established photo-points. The photo-points will be numerous enough and located such that each Planting Area is visually represented.

Surveying for the presence of invasive exotic plant species will be conducted throughout each Planting Area concurrent with the abovementioned reve. Terrestrial weeds identified on the Cal-IPC list as “High” and/or those exotic plants that pose a substantive threat to the plantings/seedings, will be controlled if observed in excess of 5 percent absolute cover or appear to be posing a substantive threat to the Planting Area.

5.0 MAINTENANCE DURING MONITORING PERIOD

If annual or final success criteria are not met, the Applicant and/or their agent(s) will prepare an analysis of the cause(s) of failure and, if determined necessary by the County of Napa and the Applicant, propose remedial action. The Applicant will be responsible at that time for reasonably

funding the contingency procedures necessary for completion of the mitigation detailed in this Plan.

After implementation, weed maintenance will focus on invasive species with a Cal-IPC rating of “High” and/or those exotic plants that pose a substantive threat to the plantings/seedlings. Weed removal activities will be conducted using methods specifically identified as effective for those target species. Surveying for the presence of invasive plants will occur once per year concurrent with the overall monitoring. Removal by hand will occur opportunistically wherever these species are observed in the Planting Areas by monitoring Qualified Biologist; however, this is not intended to be a replacement for intensive management of invasive plants by the Landscape Contractor if deemed necessary.

6.0 MONITORING REPORTS

6.1 As-built Plans

As noted above, an as-built report will be drafted and submitted to the County of Napa within 90 days of the of the final plantings/seedlings. The report will note the number, size, and approximate relative location of each planting. Additionally, the report will illustrate the approximate boundaries naturally emergent seedlings and the boundaries of the seeding and topsoil application. These will provide the baseline for the monitoring period.

6.2 Annual Reports

Annual reports will be prepared that discuss monitoring methods and results. Reports may be prepared by the Applicant and/or their agent(s). Full annual reports will be provided for each monitoring year, which will be submitted to Napa County by January 31st of each monitoring year. A Qualified Biologist with experience in vegetation monitoring will supervise the report preparation. These reports will assess progress in meeting success criteria and identify any problems with sedimentation, vandalism, and/or other general causes of poor survival or degradation. If necessary, recommendations or improvements based on adaptive management will be made and confirmed with Napa County, to ensure the success criteria are met during the monitoring period. Such recommendations may include supplemental planting/seeding, aggressive invasive species removal, irrigation/fertilizer application, etc.

6.3 Notification of Completion

Upon completion of the final year (Year 5) of monitoring, a final report will be provided to Napa County detailing the results of the final year of monitoring. If the Planting Area has met the success criteria outlined in Section 4.0 and established during the baseline data collection by the end of the five-year period, then the proposed action in the final report will be for no further actions. If the Planting Area has not met the success criteria outlined in Section 4.0 by the end of the five-year period, then that year’s report may recommend additional corrective measures and/or extending the monitoring period followed by another annual report and notification of completion the following year. When the Planting Area has met the success criteria outlined in Section 4.0 or

revised criteria agreed to by Napa County, the Applicant will submit a signed Notice of Completion to Napa County to confirm successful completion of the planting effort.

7.0 ADAPTIVE LONG-TERM MANAGEMENT PLAN

The property holder of the fee title is responsible for long-term management of the entire Preservation Area. Long-term maintenance activities may include but are not limited to replanting, invasive species controls, and trash cleanup to ensure the continued functionality and health of the restoration activities described in this Plan. The entire Preservation Area will be subject to a deed restriction or similar scheme agreed to between the property owner and Napa County to protect the entire Preservation Area from development in perpetuity.

Appendix A

Figures

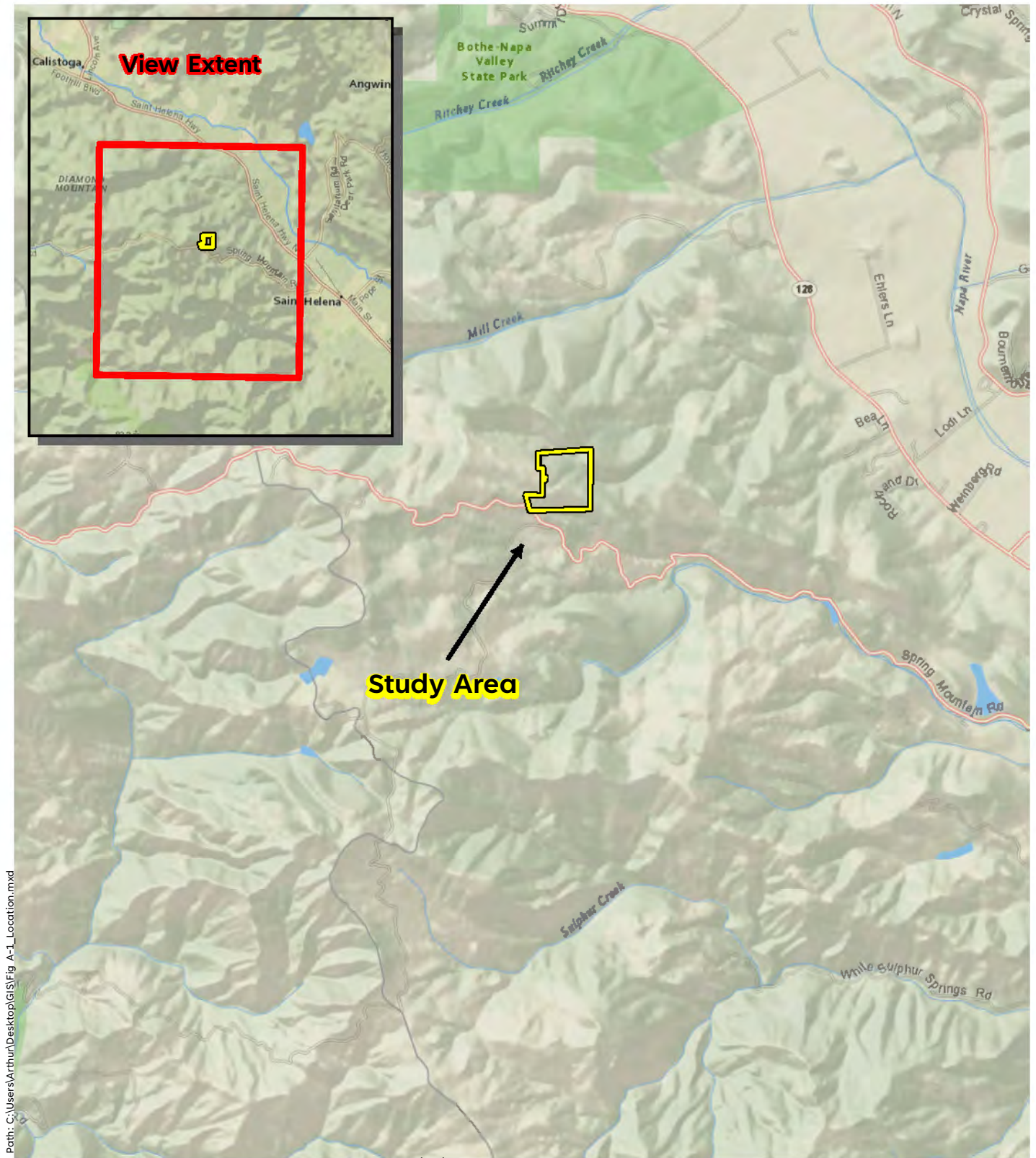
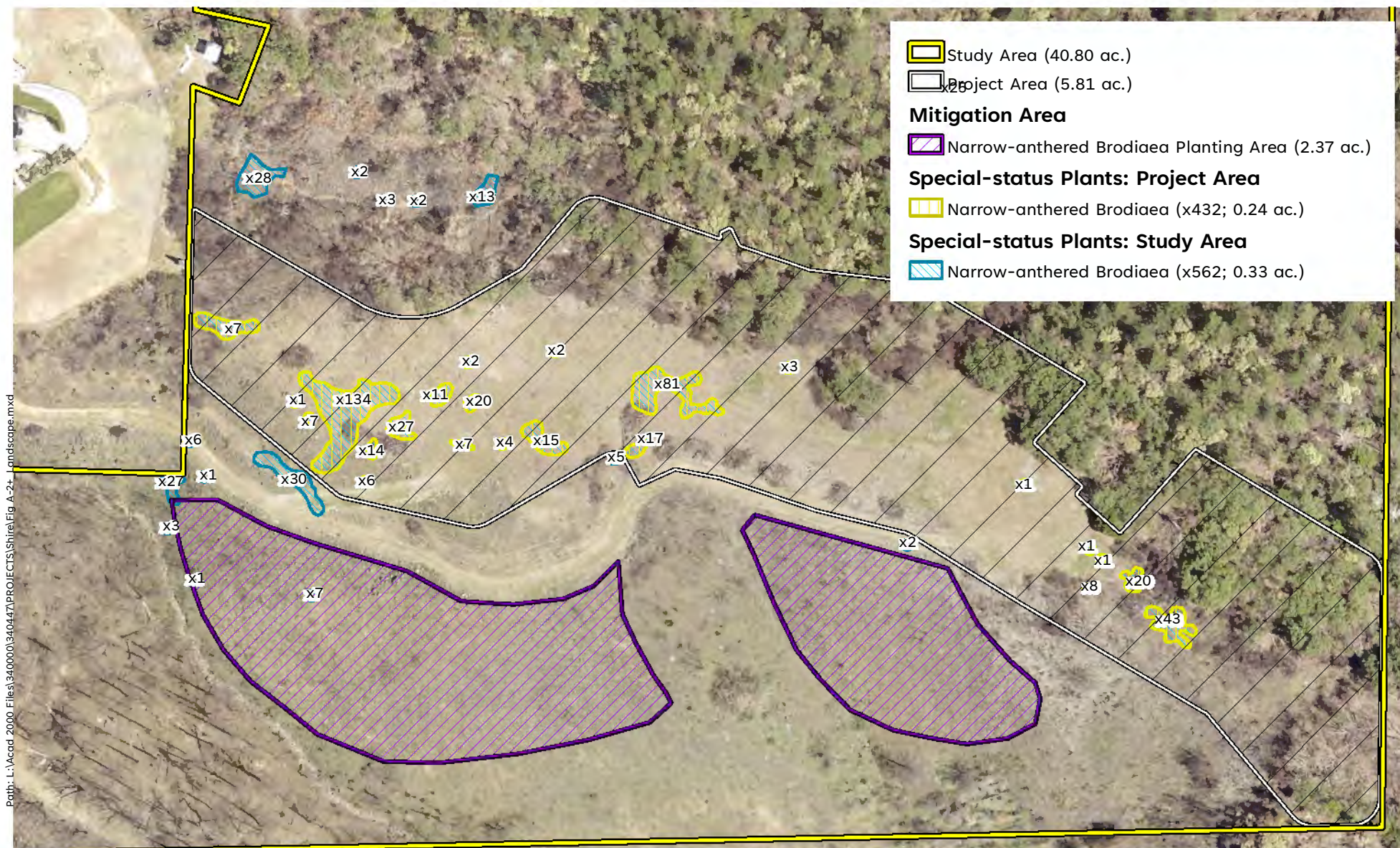


Figure A-1. Study Area Location

Spring Mountain Road
Napa County, CA

0 0.75 1.5
Miles





Sources: DigitalGlobe 2016 Aerial, WRA | Prepared By: Arthur, 10/3/2025

Figure A-2. HMA Planting Area

Fehrenbach Property
Napa County, CA

0 200 400
Feet



Appendix B

Photographs



Impact Area with chamise chaparral where several subpopulations of narrow-anthered brodiaea were observed and censused in June 2025



Planting Area with chamise chaparral where very few narrow-anthered brodiaea were observed and censused in June 2025; will serve as donor location for narrow-anthered brodiaea

Appendix C

Estimated Water Use for Habitat Management Area Irrigation

Appendix C. Estimated Water Use for Habitat Management Area Irrigation

This appendix summarizes estimated seasonal irrigation demand for habitat management areas (HMA) supporting Narrow-anthered Brodiaea (*Brodiaea leptandra*) mitigation and restoration. Drip irrigation will be used for transplanted bulbs, and broadcast (sprinkler or soaker hose) irrigation for seeded areas, as detailed in Section 3.1 of the HMP. Irrigation will be deployed during the dry season (spring–early summer) and/or during below normal rainfall periods in the wet season (late fall–early spring) and under the guidance of the Qualified Biologist/Landscape Contractor. Irrigation will be restricted to the 5-year establishment period, after which it will be discontinued. Final irrigation schedules and adjustments should be determined by the Landscape Contractor based on real-time field observations to support plant establishment and habitat health.

Irrigation Approach:

- Drip irrigation will be used for transplanted bulbs, and broadcast irrigation (e.g., sprinkler or soaker hose) for seeded areas, as described in Section 3.1 of the HMP.
- Irrigation is expected to be required only during the dry season (spring through early summer), and only during the 5-year establishment period. Once plantings are self-sufficient, irrigation will be discontinued.

Watering Schedule and Estimate:

- **Drip Irrigation:** Each of the 432 transplants will receive approximately 1 gallon of water per event, twice per week, for 16 weeks per year (April–July). This results in an estimated annual use of 13,824 gallons.
- **Broadcast Irrigation:** Seeded areas (estimated at 0.5 acre) will receive approximately 0.25 inch of water per week, once per week, for 8 weeks per year (April–May). This results in an estimated annual use of 5,440 gallons.

Total Estimated Annual Water Use:

- **Drip:** 13,824 gallons/year
- **Broadcast:** 5,440 gallons/year
- **Combined:** 19,264 gallons/year

These estimates are based on best available guidance for native California bulbs and wildflower establishment. Actual irrigation needs may vary depending on weather and site conditions, and the schedule should be refined in consultation with the Qualified Biologist or Landscape Contractor.